

Appl. No. 09/805,620

### **REMARKS**

Claims 27-35, 38, 40, 43, and 45-49 pending in the application with claim 40 amended herein, new claims 48 and 49 added herein, and claims 22-26 cancelled herein.

Claims 22-26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Okase (U.S. Patent No. 5,884,009) in view of Sneh (U.S. Patent No. 6,305,314). Without admitting to the propriety of the rejection, Applicant herein cancels claims 22-26.

Claims 22-35, 38, 40, 43, and 45-47 stand rejected under 35 U.S.C. 103(a) as being unpatentable over DiMeo, Jr. (U.S. Patent No. 6,972,430) in view of Ohashi (U.S. Patent No. 6,059,885) in further view of Yamamuka (U.S. Patent No. 6,312,526). Applicant requests reconsideration.

Claim 27 sets forth an ALD method that includes, among other features, injecting a precursor into a deposition chamber and separately injecting a purge material at a first flow rate through at least one purge passageway through a lid into the chamber. The injected purge material flows along at least a portion of the chamber walls. The method includes separating the injected purge material from a substrate holder with a flow director, ceasing the precursor injection, substituting the precursor injection for additional purge material injection, and adjusting the first flow rate to a second flow rate different from the first flow rate.

Review of DiMeo, Ohashi, and Yamamuka reveals that none of the references disclose ceasing the precursor injection and substituting additional purge material injection. Also, none of the references disclose

*Appl. No. 09/805,620*

adjusting the purge material first flow rate to a second flow rate. The Office Action does not allege otherwise. Applicant acknowledges an allegation on page 7 of the Office Action that Ohashi teaches "the flow profiles that should be used when only one gas is being supplied to the chamber." Applicant also acknowledges the allegation on page 7 that all other limitations may be found in column 18, lines 28-67 and Figs. 7 and 8 of Ohashi. However, review of the referenced description in Ohashi fails reveal any disclosure or suggestion pertinent to the subject matter asserted above as absent from each of the cited references. Accordingly, DiMeo in view of Ohashi and Yamamuka fails to disclose every limitation of claim 27. Claims 28-35, 40, 48, and 49 depend from claim 27 and are patentable at least for such reason as well as for the additional limitations of such claims not disclosed or suggested.

Amended claim 38 sets forth an ALD method that includes, among other features, injecting a deposition precursor into a deposition chamber, ceasing delivery of the precursor, and delivering purge material through the process chemical port. The method includes separately delivering a purge material through at least one purge port in a lid while delivering the purge material through the process chemical port, the purge material not being injected through the purge port during injection of the precursor through the process chemical port.

Review of DiMeo, Ohashi, and Yamamuka reveals that none of the references disclose delivering purge material through the process chemical port while separately delivering purge material through the purge port, in the manner claimed. The Office Action does not allege otherwise. Accordingly,

*Appl. No. 09/805,620*

DiMeo in view of Ohashi and Yamamuka fail to disclose every limitation of claim 38.

Claim 43 sets forth an ALD method that includes, among other features, injecting at least one purge material into a deposition chamber, injecting a first deposition precursor into a deposition chamber, and forming a purge curtain from injected purge material. The method includes ceasing delivery of the first precursor into the chamber, flowing the injected purge material, and forming the purge curtain while delivering purge material through the process chemical port.

Review of DiMeo, Ohashi, and Yamamuka reveals that none of the references discloses delivering purge material through the process chemical port. Also, none of the references disclose forming the purge curtain while delivering purge material through the process chemical port. Accordingly, DiMeo in view of Ohashi and Yamamuka fails to disclose every limitation of claim 43. Claims 45-47 depend from claim 44 and are patentable at least for such reason.

At least for the reasons described above, Applicant asserts that claims 27-35, 38, 40, 43, and 45-49 are patentable and requests allowance in the next Office Action.

Applicant also asserts that amended claim 40, depending ultimately from claim 27, is patentable. Claim 40 sets forth forming a curtain from the injected purge material, wherein the purge curtain is formed between a dead space and an injected precursor to prevent the precursor from migrating into the dead space. Review of Ohashi reveals that it merely describes using a

*Appl. No. 09/805,620*

straightening vain to suppress gas eddy flow as in column 2, line 44 to column 3, line 8 and column 3, lines 40-67. Ohashi does not disclose and is not alleged to disclose providing a purge curtain between a dead space and an injected precursor, as in claim 40. Instead, reaction gas in Ohashi continues to flow through the region of the reactor where gas eddy flow occurs or is suppressed by the straightening vain. Neither DiMeo nor Yamamuka disclose the subject matter absent from Ohashi. As a result, the cited combination fails to disclose every limitation of claim 40.

Applicant further asserts that new claims 48 and 49, depending from claim 27, are patentable. At least paragraphs 35, 36, and 41 and Figs. 4-6 support claim 48. At least paragraphs 37 and 43 support claim 49.

Applicant herein establishes adequate reasons supporting patentability of claims 27-35, 38, 40, 43, and 45-49 and requests allowance of all pending claims in the next Office Action.

Respectfully submitted,

Dated: 20 Feb 2007

By: \_\_\_\_\_

James E. Lake  
Reg. No. 44,854